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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Missile Defense Agency										Date: February 2018		
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0604874C I Improved Homeland Defense (HLD) Interceptors							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	380.331	247.362	636.430	561.220	-	561.220	485.755	502.023	604.309	635.719	Continuing	Continuing
MD97: Improved HD Interceptors	368.247	236.361	619.060	539.340	-	539.340	462.825	474.430	576.045	607.472	Continuing	Continuing
MD40: Program Wide Support	12.084	11.001	17.370	21.880	-	21.880	22.930	27.593	28.264	28.247	Continuing	Continuing
Program MDAP/MAIS Code: 362												
Note Decrease from FY 2018 to FY 2019 reflects completion of Redesigned Kill Vehicle (RKV) module-level design verification testing prior to the component level and system level Critical Design Reviews (CDR) and completion of the RKV/Configuration 2 booster All Up Round Engineering effort.  FY 2017 MISSILE DEFEAT ENHANCEMENTS REPROGRAMMING (FY2017-26 PA): +\$8.000 million was required to address emergency warfighting requirements in support accelerate Redesigned Kill Vehicle (RKV) efforts to support 20 additional GBIs in a new missile field (Missile Field #4) to defeat developing threats in terms of number of threat missiles and complexity of threat payloads. This is a base budget requirement.  FY 2018 MISSILE DEFEAT AND DEFENSE ENHANCEMENTS (MDDE) BUDGET AMENDMENT: +\$170.900 million is required to address emergency warfighting requirements in support of 20 additional GBIs in a new missile field (Missile Field #4) and risk reduction for 20 additional GBIs, including addition of a non-intercept target for CTV-03 in FY20 and acceleration of software builds prior to critical design review.  A. Mission Description and Budget Item Justification The Ground-based Midcourse Defense (GMD) element of the Ballistic Missile Defense System (BMDS) provides combatant commanders with a continuously available (24 hours a day, 365 days a year) capability to defend the Homeland against limited Intercontinental Ballistic Missile (ICBM) attacks. The improved Homeland Defense interceptor includes a Redesigned Kill Vehicle (RKV), an improved booster (C3), and All Up Round (AUR) engineering necessary to integrate the RKV with new and existing booster configurations. The RKV improves interceptor reliability, reduces unit cost, improves maintainability in the field, and improves performance against emerging threats. The C3 booster improves survivability against lightning and threat environments. AUR engineering enables an initial operational capability of RKV integration with existing C1 and C2 boosters and flight testing. When C3 development completes, AUR engineering enables full operational capability of RKV integration with the C3 booster.  FY 2017 MISSILE DEFEAT ENHANCEMENTS REPROGRAMMING (FY2017-26 PA): +\$8.000M was required to address emergency warfighting readiness requirements to ensure readiness of the BMDS. +\$8.000M Project MD97 Improved HD Interceptors: required to accelerate Redesigned Kill Vehicle (RKV) efforts to support 20 additional GBIs in a new missile field (Missile Field #4) to defeat developing threats in terms of number of threat missiles and complexity of threat payloads. This is a base budget requirement.												

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<b>Appropriation/Budget Activity</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604874C <i>I Improved Homeland Defense (HLD) Interceptors</i>
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FY 2018 MISSILE DEFEAT AND DEFENSE ENHANCEMENTS (MDDE) BUDGET AMENDMENT: +\$170.900M is required to address emergency warfighting readiness requirements to ensure readiness of the BMDS.

+\$75.000M Project MD97 Improved HD Interceptors: required to accelerate Redesigned Kill Vehicle (RKV) efforts to support 20 additional GBIs in a new missile field (Missile Field #4) to defeat developing threats in terms of number of threat missiles and complexity of threat payloads. This is a base budget requirement.

+\$95.900M Project MD97 Improved HD Interceptors: required for risk reduction for 20 additional GBIs, including addition of a non-intercept target for CTV-03 in FY2020 and acceleration of software builds prior to critical design review.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>
Previous President's Budget	274.148	465.530	496.414	-	496.414
Current President's Budget	247.362	636.430	561.220	-	561.220
Total Adjustments	-26.786	170.900	64.806	-	64.806
• Congressional General Reductions	-54.802	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	25.000	0.000			
• SBIR/STTR Transfer	-4.984	0.000			
• FY 2017 Request for Additional Appropriations	0.000	0.000	0.000	-	0.000
• Missile Defeat and Defense Enhancement	8.000	170.900	0.000	-	0.000
• Other Adjustment	0.000	0.000	64.806	-	64.806

**Change Summary Explanation**

Increase from PB18 to PB19 in FY 2019 due to addition of RKV risk reduction activities to include adding a non-intercept target for CTV-03 in FY2020 and acceleration of software builds and component qualification prior to CTV-03.

FY 2017 MISSILE DEFEAT ENHANCEMENTS REPROGRAMMING (FY2017-26 PA): +\$8.000 million was required to address emergency warfighting requirements

in support accelerate Redesigned Kill Vehicle (RKV) efforts to support 20 additional GBIs in a new missile field (Missile Field #4) to defeat developing threats in terms of number of threat missiles and complexity of threat payloads. This is a base budget requirement.

FY 2018 MISSILE DEFEAT AND DEFENSE ENHANCEMENTS (MDDE) BUDGET AMENDMENT: +\$170.900 million is required to address emergency warfighting requirements in support of 20 additional GBIs in a new missile field (Missile Field #4) and risk reduction for 20 additional GBIs, including addition of a non-intercept target for CTV-03 in FY2020 and acceleration of software builds and component qualification prior to critical design review.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity	R-1 Program Element (Number/Name)	
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)	PE 0604874C I Improved Homeland Defense (HLD) Interceptors	
<div>+\$75.000M Project MD97 Improved HD Interceptors: required to accelerate Redesigned Kill Vehicle (RKV) efforts to support 20 additional GBIs in a new missile field (Missile Field #4) to defeat developing threats in terms of number of threat missiles and complexity of threat payloads. This is a base budget requirement. +\$95.900M Project MD97 Improved HD Interceptors: required for risk reduction for 20 additional GBIs, including addition of a non-intercept target for CTV-03 in FY2020 and acceleration of software builds prior to critical design review.</div> <div>PB19 reflects approved out year Missile Defeat and Defense Enhancement (MDDE) tails.</div>		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency										Date: February 2018		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense (HLD) Interceptors				Project (Number/Name) MD97 / Improved HD Interceptors			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MD97: Improved HD Interceptors	368.247	236.361	619.060	539.340	-	539.340	462.825	474.430	576.045	607.472	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Decrease from FY2018 to FY 2019 reflects completion of Redesigned Kill Vehicle (RKV) module-level design verification testing prior to the component level and system level Critical Design Reviews (CDR) and completion of the RKV/Configuration 2 booster All Up Round Engineering effort.

**A. Mission Description and Budget Item Justification**

The Ground-based Midcourse Defense (GMD) element of the Ballistic Missile Defense System (BMDS) provides combatant commanders with a continuously available (24 hours a day, 365 days a year) capability to defend the Homeland against limited Intercontinental Ballistic Missile (ICBM) attacks. The improved Homeland Defense interceptor includes a Redesigned Kill Vehicle (RKV), an improved booster (C3), and All Up Round (AUR) engineering necessary to integrate the RKV with new and existing booster configurations. The RKV improves interceptor reliability, reduces unit cost, improves maintainability in the field, and improves performance against emerging threats. The C3 booster improves survivability against lightning and threat environments. AUR engineering enables an initial operational capability of RKV integration with existing C1 and C2 boosters and flight testing. When C3 development completes, AUR engineering enables full operational capability of RKV integration with the C3 booster.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
<b>Title:</b> Improved Homeland Defense (HLD) Interceptor Development	226.144	606.834	524.709
<b>Articles:</b>	-	-	-
<p><b>Description:</b> HLD development objectives include: redesigning the GMD kill vehicle, implementing tactical booster modifications, and conducting All-Up Round (AUR) system engineering. The RKV will be built with a modular, open architecture and designed with common interfaces and standards, making upgrades easier and broadening MDA's vendor and supplier base. The design for growth allows future upgradability. The Configuration 3 integrated boost vehicle will incorporate enhanced lightning protection, power transient protection, and survivability enhancements. The AUR development approach integrates the RKV with three different 3-stage boost vehicle configurations: C1, C2, and C3. The goal of all of these efforts is to develop and field an integrated set of capabilities to improve the reliability, survivability, lethality, and discrimination to defeat future threats. Specific and/or unique accomplishments to each FY are as follows:</p> <p><b>FY 2018 Plans:</b></p> <ul style="list-style-type: none"> <li>-Complete module and payload critical design reviews to establish the product baseline to ensure the RKV has a reasonable expectation of satisfying the RKV Performance Specification</li> <li>-Conduct an initial IFICS End-to-End Test to demonstrate preliminary communication capability between the RKV and the GMD Ground System</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Missile Defense Agency		<b>Date:</b> February 2018	
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / <i>Improved Homeland Defense (HLD) Interceptors</i>	<b>Project (Number/Name)</b> MD97 / <i>Improved HD Interceptors</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2017</b>	<b>FY 2018</b>
<ul style="list-style-type: none"> <li>-Conduct Integrated Communications Radio KV to KV Integration to demonstrate and validate the design approach of the new RKV communication capability</li> <li>-Conduct Production Highly Accelerated Life Testing to support RKV reliability improvements, identify stable operating and destruct limits, and improve the probability of first pass success during qualification</li> <li>-Conduct KV to KV Antenna demonstrations to characterize engineering parameters, gather data and validate the design approach of the new RKV communication capability</li> <li>-Complete buildup of the qualification unit for testing to demonstrate satisfaction of design requirements to support readiness for flight test and manufacturing</li> <li>-Continue modeling and simulation development and integration to assess RKV performance in preparation for flight test and support of GMD and BMDS assessments</li> <li>-Continue development of kill vehicle algorithms and software, and conduct software independent verification and validation testing at contractor and government facilities to conduct independent testing and analysis ensuring the RKV software meets its requirements and that the delivered software system satisfies requirements, the intended use, and warfighter needs</li> <li>-Continue AUR systems engineering to support the testing and fielding of RKV and C1, C2, and C3 equipped interceptors in order to support an uninterrupted fleet of no fewer than 44 emplaced GBIs for the warfighter</li> <li>-Complete AUR preliminary design to support development of the first RKV flight test (CTV-03) to demonstrate RKV integration and performance in flight test</li> <li>-Accelerate Redesigned Kill Vehicle (RKV) efforts to support 20 additional GBIs in a new missile field (Missile Field #4) to defeat developing threats in terms of number of threat missiles and complexity of threat payloads.</li> <li>-Risk reduction for 20 additional GBIs, including addition of a non-intercept target for CTV-03 in FY20 and acceleration of software builds and component qualification prior to critical design review</li> </ul> <p><b>FY 2019 Plans:</b></p> <ul style="list-style-type: none"> <li>-Complete critical design reviews to establish the product baseline to ensure the RKV satisfies the RKV Performance Specification</li> <li>-Continue In-Flight Interceptor Communications System (IFICS) End-to-End Test to demonstrate communication between the RKV and the GMD Ground System</li> <li>-Conduct Integrated Communications Radio Kill Vehicle (KV) to Kill Vehicle (KV) Integration to demonstrate and validate the design approach of the new RKV communication capability</li> <li>-Conduct Production Highly Accelerated Life Testing to support RKV reliability improvements, identify stable operating and destruct limits, and improve the probability of first pass success during qualification</li> <li>-Continue KV to KV Antenna demonstrations to characterize engineering parameters, gather data and validate the design approach of the new RKV communication capability</li> </ul>			

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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense (HLD) Interceptors	Project (Number/Name) MD97 / Improved HD Interceptors		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019
<p>-Continue development of kill vehicle algorithms and software, and conduct software independent verification and validation testing at contractor and government facilities to conduct independent testing and analysis ensuring the RKV software meets its requirements and that the delivered software system satisfies requirements, the intended use, and warfighter needs</p> <p>-Continue AUR systems engineering to support the testing and fielding of RKV and C1, C2, and C3 equipped interceptors</p> <p>-Accelerate Redesigned Kill Vehicle (RKV) efforts to support 20 additional GBIs in a new missile field (Missile Field #4) to defeat developing threats in terms of number of threat missiles and complexity of threat payloads.</p> <p>-Acceleration of software builds and design verification testing prior to critical design review to reduce program risk and to take advantage of a target added in CTV-03.</p> <p>-Execute risk reduction strategy by developing a radiation hardened avionics architecture through system engineering, prototype development, and parts testing</p> <p><b>FY 2018 to FY 2019 Increase/Decrease Statement:</b></p> <p>Decrease from FY 2018 to FY 2019 reflects completion of Redesigned Kill Vehicle (RKV) module-level design verification testing prior to the component level and system level Critical Design Reviews (CDR) and completion of the RKV/Configuration 2 booster All Up Round Engineering effort.</p>				
<p><b>Title:</b> Program Operations</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Program Operations provides for integrated program management of the Improved Homeland Defense Interceptor efforts. This effort includes: Technical and business management support, financial management, cost and schedule performance analysis, cost estimation and analysis, configuration management, and integration activities to ensure the program meets cost, schedule, and performance goals; Ground-based Midcourse Defense (GMD) Redesigned Kill Vehicle (RKV) program compliance with internal and external direction, policies, and regulations to deliver critical capability via a consistent and disciplined process; Mission Assurance and Manufacturing Engineering Program to include quality, configuration management, manufacturing, engineering, and safety in all phases of the system life cycle, throughout the supply chain and at all levels of assembly emphasizing high yield rates which minimize test and rework costs; technical and testing oversight, verification of hardware and software development, quality / safety / mission assurance, integrated logistics support, and government manpower and infrastructure to develop, test, and sustain the RKV.</p> <p>Specific and/or unique accomplishments to each FY are as follows:</p> <p><b>FY 2018 Plans:</b></p> <p>- SEE ABOVE.</p> <p><b>FY 2019 Plans:</b></p>		10.217 -	12.226 -	14.631 -

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Missile Defense Agency										<b>Date:</b> February 2018		
<b>Appropriation/Budget Activity</b> 0400 / 4				<b>R-1 Program Element (Number/Name)</b> PE 0604874C / Improved Homeland Defense (HLD) Interceptors				<b>Project (Number/Name)</b> MD97 / Improved HD Interceptors				
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>										<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
- SEE ABOVE.												
<b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> Increase from FY 2018 to FY 2019 due to additional personnel required to lead and manage the RKV program.												
<b>Accomplishments/Planned Programs Subtotals</b>										236.361	619.060	539.340
<b>C. Other Program Funding Summary (\$ in Millions)</b>												
<b>Line Item</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019 Base</b>	<b>FY 2019 OCO</b>	<b>FY 2019 Total</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	
• 0203882C: MD08: GMD O&M	129.281	137.896	143.027	-	143.027	139.319	142.269	145.188	0.000	Continuing	Continuing	
• 0603882C: Ballistic Missile Defense Midcourse Defense Segment	1,034.861	957.097	926.359	-	926.359	1,046.235	847.537	585.956	572.619	Continuing	Continuing	
• 0603914C: Ballistic Missile Defense Test	294.441	316.193	365.681	-	365.681	349.388	320.909	320.332	327.584	Continuing	Continuing	
• 0603915C: Ballistic Missile Defense Targets	521.784	460.125	517.852	-	517.852	441.827	383.739	405.909	417.800	Continuing	Continuing	
• 0604887C: Ballistic Missile Defense Midcourse Defense Segment Test	61.350	76.757	81.934	-	81.934	95.458	82.956	78.715	85.362	Continuing	Continuing	
<b>Remarks</b>												
<b>D. Acquisition Strategy</b> MDA is executing an acquisition strategy to develop an integrated RKV with a Cross-Industry team design solution. This concept includes potential production sources from industry and provides a consolidated product that includes the collective knowledge of and leverages capabilities from the industry leaders in kill vehicle design and development. The industry teaming method incorporates the most viable technical approaches from each contractor and allows for combination of resources to shorten the learning curve and reduce the time needed to develop and begin initial production. This strategy allows for industry to provide the best value and best design solution for the MDA while setting the conditions for future competition of production. The development phase is followed by initial production and then a competitive full rate production phase. The competitive production phase encompasses the purchase, production, and the integration of the proven components demonstrated in the development phase and provides competitive benefits to the Government. This strategy allows for industry to provide the best value and best design solution for the MDA while setting the conditions for future competition of production. The Government, as the design authority, retains responsibility for the execution of the program cost, schedule, and the technical performance of the RKV to meet requirements levied on the contractor. The Government has implemented a rigorous systems engineering process to ensure that the design and development efforts meet requirements. The MDA goal is to field the initial production RKV's to recap existing CE-												

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency		Date: February 2018
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense (HLD) Interceptors	Project (Number/Name) MD97 / Improved HD Interceptors
<p>I GBIs and support follow-on BMDS test events by FY2022. This acquisition strategy is documented in the RKV Acquisition Plan signed by the Defense Acquisition Executive in October 2015.</p> <p>In January of 2018 the MDA Director signed an Acquisition Strategy Decision Memorandum (ASDM) changing the acquisition strategy to execute the Missile Defeat and Defense Enhancement scope. The Development and Sustainment Contract (DSC) will continue with the Boeing Company to Q1 FY2024 to build the 20 GBI's and 20 Silo's with supporting test, engineering, software, and performance based logistics scope. This additional capability will provide 64 interceptors by the end of calendar year 2023 as well as maintain operation and support capabilities and support upcoming ground and flight tests. The Justification and Approval for this action was signed by the MDA Director on 2 January 2018.</p> <p><b>E. Performance Metrics</b> N/A</p>		



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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2019 Missile Defense Agency												<b>Date:</b> February 2018			
<b>Appropriation/Budget Activity</b> 0400 / 4						<b>R-1 Program Element (Number/Name)</b> PE 0604874C / Improved Homeland Defense (HLD) Interceptors						<b>Project (Number/Name)</b> MD97 / Improved HD Interceptors			
<b>Product Development (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Improved Homeland Defense (HLD) Interceptor Development - OGA/ FFRDC Booster Avionics Risk Reduction	MIPR	Draper : AL/CA	0.000	0.000		0.000		8.394	Oct 2018	-		8.394	Continuing	Continuing	Continuing
Improved Homeland Defense (HLD) Interceptor Development - PRIME AUR System Engineering and Development	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	0.000		52.032	Nov 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Improved Homeland Defense (HLD) Interceptor Development - PRIME RKV Development	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	297.727	214.114	Nov 2016	522.271	Nov 2017	475.734	Oct 2018	-		475.734	Continuing	Continuing	Continuing
Improved Homeland Defense (HLD) Interceptor Development - Post-Intercept Assessment	C/CPIF	Boeing AL/AK/AZ : CA/CO/TX/VA	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Improved Homeland Defense (HLD) Interceptor Development - Prior year no longer funded in the FYDP	Various	Various : Various	21.114	0.000		0.000		0.000		-		0.000	0.000	21.114	0.000
Improved Homeland Defense (HLD) Interceptor Development - RKV Development Lab and System Support	MIPR	AMRDEC : Redstone Arsenal, AL	26.935	12.030	Nov 2016	32.531	Nov 2017	40.581	Oct 2018	-		40.581	Continuing	Continuing	Continuing
<b>Subtotal</b>			345.776	226.144		606.834		524.709		-		524.709	Continuing	Continuing	N/A
<b>Remarks</b> N/A															

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2019 Missile Defense Agency												<b>Date:</b> February 2018			
<b>Appropriation/Budget Activity</b> 0400 / 4						<b>R-1 Program Element (Number/Name)</b> PE 0604874C / Improved Homeland Defense (HLD) Interceptors						<b>Project (Number/Name)</b> MD97 / Improved HD Interceptors			
<b>Support (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Operations - Contract Support Services	C/CPFF	Various AL/AK / CA/ CO/VA	11.563	6.567	Oct 2016	6.101	Oct 2017	7.176	Oct 2018	-		7.176	Continuing	Continuing	Continuing
Program Operations - FFRDC Support	MIPR	MIT : LL AL	3.132	0.000		0.426		0.344	Oct 2018	-		0.344	Continuing	Continuing	Continuing
Program Operations - Government Civilian Salaries	MIPR	MDA : AL/VA	3.858	2.263		2.428	Oct 2017	2.364	Oct 2018	-		2.364	Continuing	Continuing	Continuing
Program Operations - Other Government Agencies	MIPR	Various AL/VA : FL/ CO	3.178	1.199	Oct 2016	2.996	Oct 2017	4.396	Oct 2018	-		4.396	Continuing	Continuing	Continuing
Program Operations - Prior year no longer funded in the FYDP	Various	Various : Various	0.552	0.000		0.000		0.000		-		0.000	0.000	0.552	0.000
Program Operations - Travel	MIPR	MDA : AL/VA	0.188	0.188	Oct 2016	0.275	Oct 2017	0.351	Oct 2018	-		0.351	Continuing	Continuing	Continuing
<b>Subtotal</b>			22.471	10.217		12.226		14.631		-		14.631	Continuing	Continuing	N/A
<b>Remarks</b> N/A															
			<b>Prior Years</b>	<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			368.247	236.361		619.060		539.340		-		539.340	Continuing	Continuing	N/A
<b>Remarks</b> N/A															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Missile Defense Agency														Date: February 2018																													
Appropriation/Budget Activity 0400 / 4														R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense (HLD) Interceptors														Project (Number/Name) MD97 / Improved HD Interceptors															
Significant Event Complete ▲				Milestone Decision Complete ★				Element Test Complete ◆				System Level Test Complete ●				Complete Activity ◆				Significant Event Planned △				Milestone Decision Planned ☆				Element Test Planned ◇				System Level Test Planned ○				Planned Activity ◇							
														FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023					
IMTP v19.1 flight and ground test event details are at a higher classification.														◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
Preliminary Design Review (PDR)															☆																												
Key Component Critical Design Review (CDR)																					☆																						
Critical Design Review (CDR)																						☆																					
Complete Qualification Test																									△																		
C3 System Requirements Review (SRR)																											☆																
C3 Preliminary Design Review (PDR)																															☆												
C3 Critical Design Review (CDR)																																	☆										

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2019 Missile Defense Agency			<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / <i>Improved Homeland Defense (HLD) Interceptors</i>	<b>Project (Number/Name)</b> MD97 / <i>Improved HD Interceptors</i>	

## Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
IMTP v19.1 flight and ground test event details are at a higher classification.	1	2017	4	2023
Preliminary Design Review (PDR)	2	2017	2	2017
Key Component Critical Design Review (CDR)	4	2018	4	2018
Critical Design Review (CDR)	1	2019	1	2019
Complete Qualification Test	4	2019	4	2019
C3 System Requirements Review (SRR)	4	2020	4	2020
C3 Preliminary Design Review (PDR)	4	2021	4	2021
C3 Critical Design Review (CDR)	3	2022	3	2022

### Note

Flight test schedule at a higher classification.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Missile Defense Agency										Date: February 2018		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense (HLD) Interceptors				Project (Number/Name) MD40 / Program Wide Support			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MD40: Program Wide Support	12.084	11.001	17.370	21.880	-	21.880	22.930	27.593	28.264	28.247	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

Program Wide Support (PWS) reflects proportional changes as a result of budget changes in the Improved Homeland Defense (HLD) Interceptors program element. Funding in the All Prior Years column represents a summary of Prior Years Total Costs for active contracts, Military Interdepartmental Purchase Requests on the R-3.

**A. Mission Description and Budget Item Justification**

PWS contains non-headquarters management costs in support of MDA functions and activities across the entire BMDS. It Includes Government Civilians and Contract Support Services. This provides integrity and oversight of the BMDS as well as supports MDA in the development and evaluation of technologies that will respond to the changing threat. Additionally, PWS includes Global Deployment personnel and support performing deployment site preparation and activation, and provides facility capabilities for MDA Executing Agent locations. Other MDA-wide costs include: physical and technical security; civilian drug testing; audit readiness; the Science, Technology, Engineering, and Mathematics (STEM) program; legal services and settlements; travel and agency training; office, equipment, vehicle, and warehouse leases; utilities and base operations; data and unified communications support; supplies and maintenance; materiel and readiness and central property management of equipment; and similar operating expenses. PWS is allocated on a pro-rata basis and therefore, fluctuates by year based on the adjusted RDT&E profile (which excludes: 0305103C Cyber Security Initiative, 0603274C Special Programs, 0603913C Israeli Cooperative Program and 0901598C Management Headquarters).

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>
<b>Title:</b> Program Wide Support	11.001	17.370	21.880
<b>Articles:</b>	-	-	-
<b>Description:</b> N/A			
<b>FY 2018 Plans:</b> N/A			
<b>FY 2019 Plans:</b> N/A			
<b>FY 2018 to FY 2019 Increase/Decrease Statement:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	11.001	17.370	21.880

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2019 Missile Defense Agency		<b>Date:</b> February 2018
<b>Appropriation/Budget Activity</b> 0400 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604874C / <i>Improved Homeland Defense (HLD) Interceptors</i>	<b>Project (Number/Name)</b> MD40 / <i>Program Wide Support</i>
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A		
<b>Remarks</b>		
<b>D. Acquisition Strategy</b> N/A		
<b>E. Performance Metrics</b> N/A		

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2019 Missile Defense Agency												<b>Date:</b> February 2018			
<b>Appropriation/Budget Activity</b> 0400 / 4						<b>R-1 Program Element (Number/Name)</b> PE 0604874C / Improved Homeland Defense (HLD) Interceptors						<b>Project (Number/Name)</b> MD40 / Program Wide Support			
<b>Support (\$ in Millions)</b>				<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Program Wide Support - Agency Facilities and Maintenance (MIPR)	MIPR	Various : Multi: AL, VA	4.368	0.000		4.503	Mar 2018	14.724	Mar 2019	-		14.724	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations Management	Various	Various : Multi: AL, VA	0.000	0.000		0.430	Jul 2018	0.331	Jul 2019	-		0.331	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Other Agency Services (MIPRs)	MIPR	Various : Multi: AL, VA	0.000	5.836		4.677	May 2018	4.573	Mar 2019	-		4.573	Continuing	Continuing	Continuing
Program Wide Support - Agency Operations and Support Services	C/CPFF	Various : Multi: AL, VA	7.716	5.165	Jul 2017	7.760	Jul 2018	2.252	Jul 2019	-		2.252	Continuing	Continuing	Continuing
<b>Subtotal</b>			12.084	11.001		17.370		21.880		-		21.880	Continuing	Continuing	N/A
<b>Remarks</b> N/A															
			<b>Prior Years</b>	<b>FY 2017</b>		<b>FY 2018</b>		<b>FY 2019 Base</b>		<b>FY 2019 OCO</b>		<b>FY 2019 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			12.084	11.001		17.370		21.880		-		21.880	Continuing	Continuing	N/A
<b>Remarks</b> N/A															

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Missile Defense Agency															Date: February 2018														
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense (HLD) Interceptors										Project (Number/Name) MD40 / Program Wide Support									
Significant Event Complete ▲					Milestone Decision Complete ★					Element Test Complete ◆					System Level Test Complete ●					Complete Activity ◆									
Significant Event Planned △					Milestone Decision Planned ☆					Element Test Planned ◇					System Level Test Planned ○					Planned Activity ◇									
										FY 2017		FY 2018		FY 2019		FY 2020		FY 2021		FY 2022		FY 2023							
MD40 Program-Wide Support										◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇					



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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Missile Defense Agency			Date: February 2018
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0604874C / Improved Homeland Defense (HLD) Interceptors	Project (Number/Name) MD40 / Program Wide Support	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MD40 Program-Wide Support	1	2017	4	2023